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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/622,089	08/10/2000	Hiroki Nomoto	490042-87GS0	6664

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EXAMINER

DOROSHENK, ALEXA A

ART UNIT PAPER NUMBER

1764

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/622,089

Applicant(s)

NOMOTO ET AL.

Examiner

Alexa A. Doroshenk

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 1 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/10/00; 9/27/00 & 11/02/01
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figure 25 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. It is suggested to delete the page following figures 24 and 25 as it is not customary in a U.S. Patent Application to provide a list of the reference numbers in the Drawings portion of the disclosure.

Specification

3. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Objections

4. Claim 1 is objected to because of the following informalities: It is believed that the recitation of "oompartment" in line 8 is a misspelling of the word "compartment". Appropriate correction is required.
5. Claim 8 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend upon another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the language "in a case where" is unclear as to what is intended. Are these limitations being recited in the alternative form? Are they optional? Are they three different embodiments? For purposes of examination they have been treated as being in the alternative form wherein the gas injecting nozzle can inject gas upwardly, horizontally or obliquely downward.

Claim 1 recites the limitation "the gas injecting nozzle" in lines 15, 20 and 25. There is insufficient antecedent basis for this limitation in the claim as "a large number of gas injecting nozzles" have been recited prior to the recitations of "the gas injecting nozzle". It is unclear as to if all of the recited "large number of gas injecting nozzles" must meet the distance requirements or if only one nozzle must meet the distance requirements. For examination purposes, the claims have been treated as if all of the nozzles must meet the distance requirements.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moss (4,517,162).

It is noted that the claims do not contain a transition phrase. MPEP 2111.03. For purposes of examination, the claims have been interpreted to be of open claim language.

With respect to claims 1 and 3, Moss discloses a fluidized bed reactor (10) comprising:

gas injecting nozzles (17 and 47) provided on a gas distributor in a lower portion of the reactor (see fig. 1);

partitions (11 and 14) which form compartments (16 and 41) in the bed;

a connecting hole (19 and 24) in the lower ¼ of the fluidized bed (see fig. 1); and

a slope (20, 25) which is greater than the angle of repose of the bed of particles (col. 6, lines 14-17).

Though Moss does not disclose the size of the connecting whole or the distance of the gas injecting nozzles from the connecting whole nor any particular sizes for any portion of the device, it is held that one of ordinary skill in the art would have found it *prima facie* obvious to arrive at an optimum or workable range of the size of a connecting hole as well as the connecting whole to nozzle distance by mere routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”).

With respect to claim 2, it can be seen in figure 1 that a lower portion (20, 25) of the connecting hole is positioned above a gas injection nozzle (17, 47).

With respect to claims 4, 9, and 11, it can be seen in figure 1 that a lower surface portion (20, 25) of the connecting hole protrudes from both ends of the partition plate (11, 14).

With respect to claims 5 and 10, it can be seen in figure 1 that the upper surface of the protruding portion (20, 25) is obliquely cut.

With respect to claims 6 and 7, it can be seen in figure 1 that the connecting hole (19, 24) and its protruding portion (20, 25) are slanted downward from the upstream side toward the downstream side.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moss (4,517,162) as applied to claim 1 above, and further in view of Butt (EP 0 144 172 A2).

Moss discloses the apparatus as discussed with respect to claim 1 above, but does not disclose wherein an injecting nozzle is provided in the middle of the connecting hole.

Butt teaches a similar compartmentalized fluidized bed device wherein a gas injection nozzle (52, 54) is positioned in the middle of the connecting hole of a partition (4) (see fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a gas injection nozzle in the middle of the connecting hole of a partition plate of Moss in the manner taught by Butt in order to provide improved fluidization and movement of the fluidized bed from compartment to compartment.

12. Claim 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Moss (4,517,162) in view of Butt (EP 0 144 172 A2) as applied to claim 12 above, and further in view of Voegeli (3,978,176).

The apparatus of Moss in view of Butt does not disclose the specific type of sparger/gas injection nozzle used.

Voegeli discloses a sparger made up of a porous material which can be used in a fluidized bed apparatus (col. 2, lines 5-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the particular sparger of Voegeli in the modified device of Moss as it is merely the selection of sparger/gas injection nozzles known to be effective in the art.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moss (4,517,162) in view of Butt (EP 0 144 172 A2) as applied to claim 12 above, and further in view of Wietzke et al (6,029,612).

The apparatus of Moss in view of Butt does not disclose wherein the nozzle is obliquely bent from the upstream side toward the downstream side.

Wietzke et al. teaches a gas injection nozzle (42, 44) in the partition (41) of a fluidized bed wherein the nozzle is obliquely bent from the upstream side toward the downstream side in order to provide a solid flow seal and prevent particles from flowing into the nozzle (col. 6, lines 6-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made provide an oblique bend from the upstream side toward the downstream side of the connecting hole of Moss in order to gain the advantages of a solid flow seal as taught by Wietzkie et al.

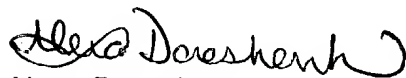
Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexa Doroshenk
Patent Examiner
Art Unit 1764

May 3, 2004